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Featured graphic. Ethno-demographic change in English local authorities, 1991–2011

Reports on the 2011 Census have recorded both 'white flight' (Goodhart, 2013; Hellen, 2013) and decreasing ethic segregation (Catney, 2013; Johnston et al, 2013). These seem contradictory but actually highlight multiple processes driving ethno-demographic change. A graphical challenge is to present the data in ways that allow complex stories to be told.

Figure 1 is a screen shot from a Motion Chart viewable at http://www.social-statistics.org/?p=1064, of the sort popularised by Hans Rosling (www.gapminder.org) and implemented using Google Docs. Each circle represents a local authority where at least 3% of the residential population classified itself as Asian (here defined as Bangladeshi, Indian, or Pakistani) in the 1991, 2001, or 2011 Census. It is shaded according to their proportion of the total population. The White British population for 1991 is an estimate.

The horizontal axis indicates the residential separation of the Asian from the White British population within each authority using the well-known dissimilarity index (Duncan and Duncan, 1955). The vertical axis is a spatial discontinuity score recording the greatest dissimilarities between neighbouring small areas. In both cases, the greater the value the greater the Asian–White British differences.

The overall story of figure 1 is of falling Asian–White British segregation on average within local authorities but with that average concealing variations within (and between) local authorities, driven in part by differing rates of loss in the White British population. Different authorities have different trajectories. In Burnley and Leicester, for example, Asian–White British segregation has increased from 2001 and the loss of the White British population has accelerated. In all the authorities highlighted, internal differences between neighbouring small areas have (in the most extreme cases) increased, but in Tower Hamlets and Newham overall segregation (measured by the dissimilarity index) has decreased. The loss of the White British population in Newham has been great. In neighbouring Tower Hamlets the rate of loss subsided from 2001.

There are other insights to be gleaned from the data. Motion Charts are intended to offer interactive exploration using motion to show change. Their value in unlocking knowledge from data is hard to reproduce on paper (and in 375 words!) The reader is encouraged to visit the originals at http://www.social-statistics.org/?p=1064 where charts for other combinations of ethnic groups and an extended commentary are available.

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Software: The maptools and spdep libraries in R (Bivand and Lewin-Koh, 2013; Bivand et al, 2013), and Google Docs Motion Charts Gadget.

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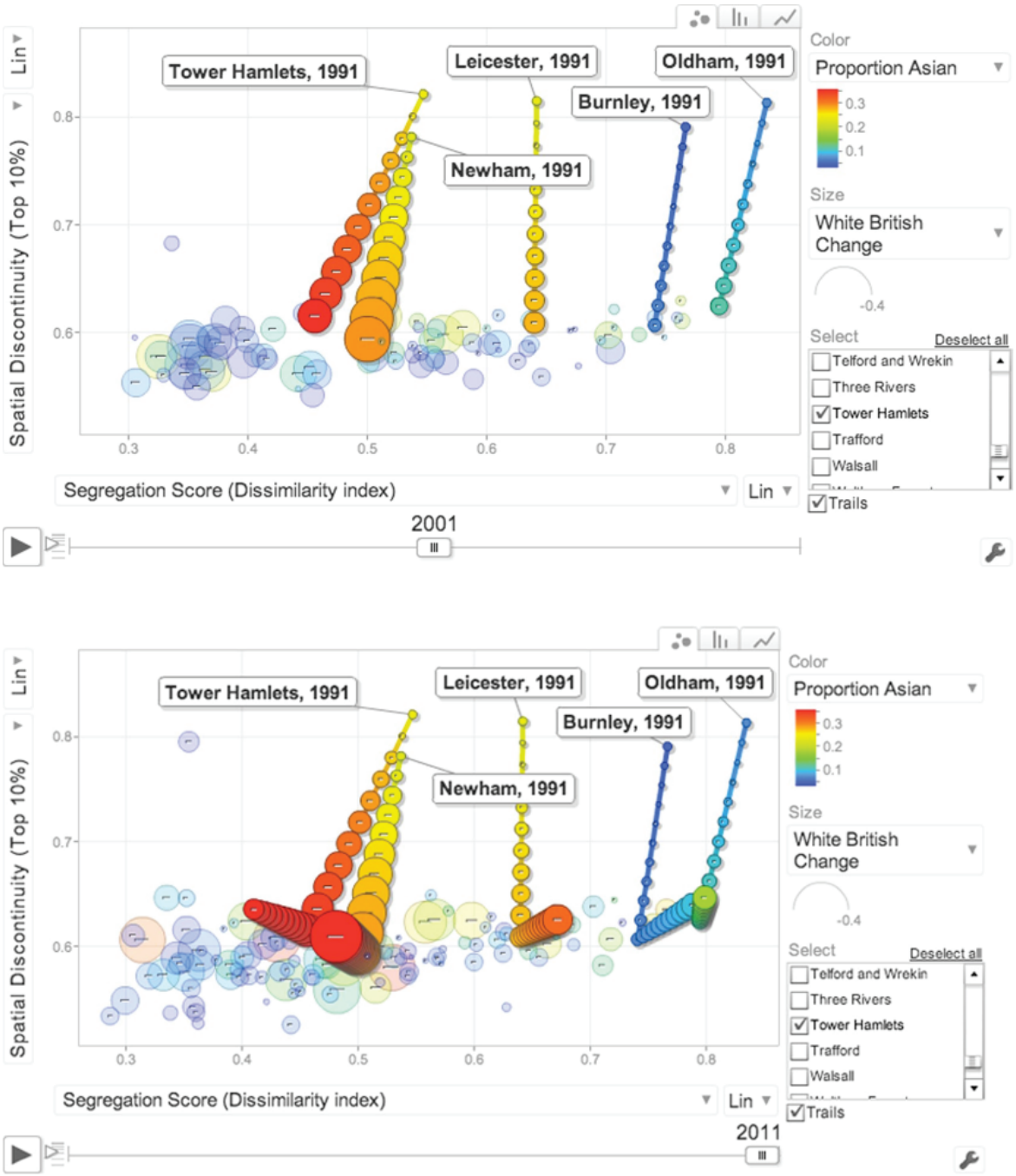

Figure 1. [In colour online.] An example of using a Motion Chart to explore ethno-demographic change in English local authorities, 1991–2011.

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